

SERVICE
MANUAL **1040**

ma**r**a**n**t**z**

model 1040

Stereo Console Amplifier

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1. INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for Marantz Model 1040 Stereo Console Amplifier.

Servicing information and voltage data included in this manual are intended for use by the knowledgeable and experienced technician only. All instruction should be read carefully. No attempt should be made to proceed without a good understanding of the operation in the circuits.

The part lists furnish information by which replacement part may be ordered from the Marantz Company. A simple description is included for parts which can be usually be obtained through local suppliers.

2. PRE-AMPLIFIER

Signals from the input jacks (TUNER, TAPE, AUX) are applied to the SELECTOR switch.

Signals from the PHONO jacks is applied to the other section of the SELECTOR switch, then, led to the phono-amplifier and equalized to match the RIAA curve for flat frequency response. The gain of the phono-amplifier consisting of direct coupled circuit (H401 and H403) is 38dB.

The outputs of the phono-amplifier are led to the SELECTOR switch. The SELECTOR switch selects one of signals from PHONO, TUNER, or AUX jacks and send it to the TAPE MONITOR switch and TAPE OUT jacks. The selected signals are then applied to the BALANCE and VOLUME controls, then to the pre-amplifier consisting of PE01, PE03 and PE05 through MODE switch.

The frequency response is varied by the BASS and TREBLE controls, and the resultant output are led to main amplifier through High-cut filter network. This network is switched in and out from the circuit by the pushswitch.

3. MAIN AMPLIFIER

Differential amplifier consists of the transistors H701 and H703 to provide satisfactory D.C. stability.

The transistor H705 drives the inverter transistors H711 and H713 which, in turn, drive the power stage consisting of H001 and H002. Transistors H707 and H709 are current limiter operating as a power transistor protection circuit.

Excessive current flow in the power output stage is detected by the resistors R751 and R753 and the resultant variation is applied to the transistors H707 and H709 and make them turned on. This decreases the base biasing current for H711 and H713. In this way the current flow in the power output stage (H001 and H002) is restricted within a safe predetermined value.

4. POWER SUPPLY UNIT

This power supply unit consisting of a transistor H801, which operates as a ripple filter, provides +35V DC to the Phono-amplifier and the Tone Amplifier.

5. TROUBLE ANALYSIS

- | | |
|-------------------------------------|--|
| 1. Excessive line consumption | a. Check for shorted H802 through H806.
b. Check for shorted transistor H001 through H004.
Check L001 for short. |
| 2. No line consumption or zero bias | a. Check line cord, fuse, shorted H005, H006.
b. Check for open rectifiers H802 through H806. |
| 3. High hum and noise level | a. Check filter capacitors C002, C003, C805, C806. |
| 4. Parasitic oscillation | a. Check for defective C707, 708, C715, C716. |

6. POWER AMPLIFIER ADJUSTMENT

1. Connect a high-sensitivity voltmeter between J709 + and J711 - ; then, adjust the trimming resistor R763 for 20mV DC. For other channel connect a high-sensitivity voltmeter between J720 + and J721 - ; then, adjust trimming resistor R764 for 20mV DC.
2. Connect a high-sensitivity voltmeter between J707 and chassis; then, adjust a trimming resistor R761 for 0mV DC. For other channel connect a high-sensitivity voltmeter between J718 and chassis; then, adjust R762 for 0mV DC.

7. PERFORMANCE VERIFICATION

Test Procedure

A. Test Equipment

Refer to Table 1 for required test equipment.

B. Preliminary Procedures

1. Make the test setup shown in Figure 1 with the instrument controls set in the following positions:

Line Switch	off
Variable-line switch	variable
Watt Meter Switch	on
Variac	0 (fully CCW)
Load	8 ohms (0.5 mfd - off)
Audio Generator	Frequency 1kHz

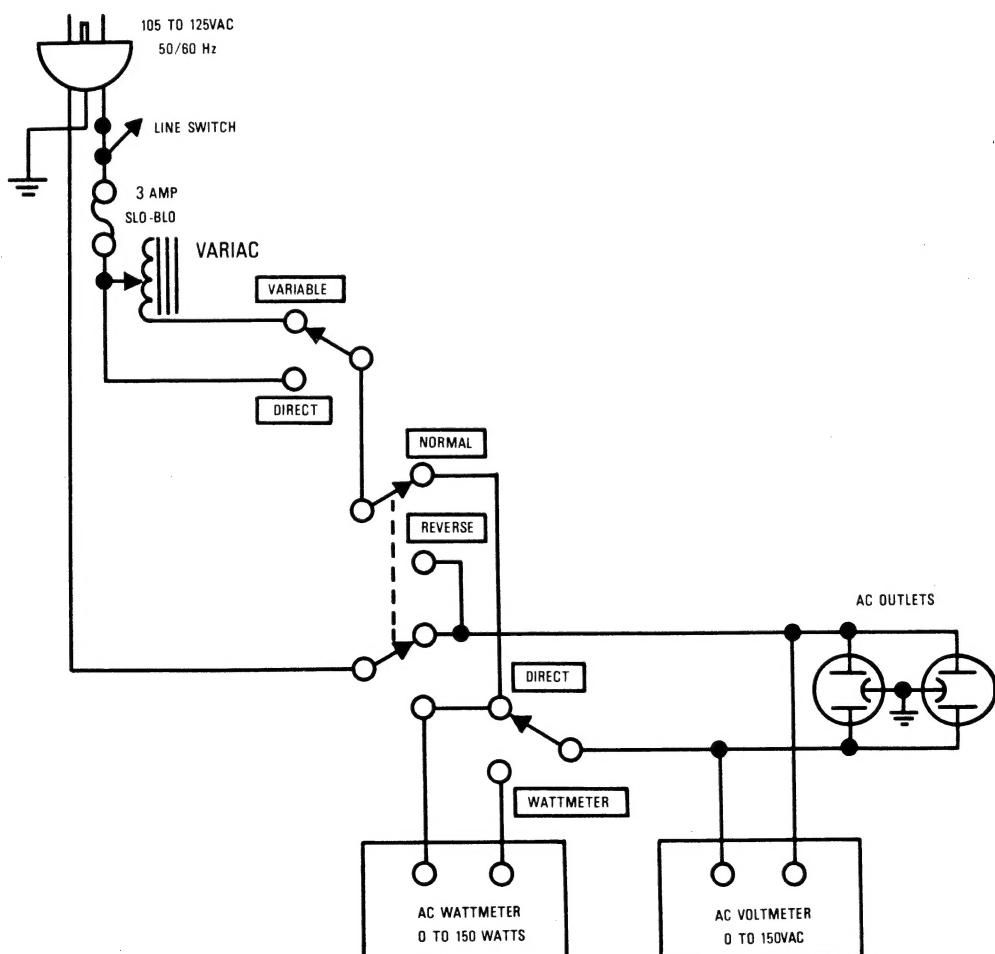


Figure 1. AC Power Control Box Simplified Schematic

Output	5V range
Gain	Minimum
AC Volt Meter	30V range

2. Make sure that connections between the resistive load and the system terminals of the Model 1040 have negligible resistance compared with the resistance of the load itself. Appreciable resistance in wiring adds to the total load, resulting in inaccurate measurements of output power.
3. Connect amplifier output to load and connect AC cord to line power. Connect a shorting plug to the PHONO INPUT jack of the Model 1040.
4. Remove the top cover.

C. Total Hum and Noise Test

1. With shorting plugs connected to the PHONO INPUT jacks and a 8-ohm resistive load connected across the speaker system output terminals, connect a distortion analyzer across the load.

NOTE: In this test and tests that follow, if distortion analyzer used does not contain a built-in voltmeter, a VTVM may be substituted.

2. Set the distortion analyzer controls for voltage measurements and apply power to the amplifier. Set the VOLUME control fully CCW. Set the SELECTOR switch to PHONO.
3. If the distortion analyzer indicates more than 1.0mV, refer to the trouble analysis section of this manual.
4. Set the VOLUME control fully CW. If the distortion analyzer indicates more than 15mV refer to the trouble analysis section of this manual.

D. Maximum Power Output

1. Connect the audio oscillator to the AUX input. Set audio oscillator frequency to 1kHz. Set SELECTOR switch to AUX.
2. With the distortion analyzer connected across the output load (8 ohms), set the analyzer on the 30V AC scale.
3. Turn the analyzer on and increase the audio oscillator output to 150mV, and verify the analyzer indicates about 12.6V.

E. Harmonic Distortion Test

1. Set the frequency of the audio oscillator and the distortion analyzer to 20kHz.
2. Set the controls of the analyzer for voltage measurement on the 30-volt scale.
3. Adjust the audio oscillator output level until the analyzer meter indicates 12.6 volts.
4. Switch the distortion analyzer to Set Level — Manual mode, and adjust SENSITIVITY for full scale reading on 0—1 scale.

5. Measure the total harmonic distortion with the analyzer and verify it is less than 0.3%.

NOTE: Any parasitic oscillation in the amplifier will be displayed on the oscilloscope when capacitance is switched into the load.

6. Switch the distortion analyzer back to SET LEVEL MANUAL. (Do not adjust sensitivity of analyzer).
7. Change the frequency of the audio oscillator and distortion analyzer to 1kHz. Adjust audio oscillator output as necessary to have a full scale reading on the 0—1 scale on the analyzer.
8. Measure the distortion, verifying it is no greater than 0.3%.
9. Repeat steps 7 and 8, changing frequency to 20Hz. Distortion should be no more than 0.3%.
10. Check for parasitic oscillations; there should be none.

F. Channel Separation

1. Set an audio oscillator to 20kHz. Connect the audio oscillator to channel L AUX input only, with shorting plug (10 kohms) in channel R AUX input. Connect distortion analyzer to SPEAKER output terminals channel L.
2. Adjust oscillator output 1V.
3. Attenuate the VOLUME control until 10W (8.9V) position on distortion analyzer; then, set the distortion analyzer to 0dB.

4. Measure channel R output. Distortion analyzer should indicate -30dB or greater.
5. If indication is less than -30dB, remove input wires which connected SELECTOR to pre-amp. board; then, reach out the best location.

8. TEST EQUIPMENT REQUIRED FOR SERVICING

Table 1 lists the test equipment required for servicing the Model 1040 Stereo Console Amplifier. The wattmeter, AC voltmeter, and variac may be assembled as a test fixture as shown schematically in Figure 1, and the load resistors and AC ammeter may be assembled into a second test fixture as shown in Figure 2.

Item	Manufacturer and Model No. (or equivalent)	Use
Distortion Analyzer	Hewlett Packard, Model 331A or 333A	Measures distortion and voltage of amplifier output.
Audio Oscillator	Weston Model CVO-100P (NOTE: Less than 0.02 percent residual distortion is required.)	Sinewave and squarewave source.
Oscilloscope	Tektronix, Model 503; Data, Model 555	Waveform analysis and troubleshooting.
VTVM	RCA Senior Volt-Ohmyst, Model WV-98C	Voltage and resistance measurements.
AC Wattmeter	Simpson, Model 390	Monitors primary power consumption of amplifier.
AC Ammeter (0 to 10 amps)	Commercial Grade	Monitors amplifier output under short circuit condition.
Line Voltmeter (0 to 150 vac)	Commercial Grade	Monitors potential of primary power to amplifier.
Variable Autotransformer (0 to 140 vac, 10 amps)	Powerstat, Model 116B	Adjusts level of primary power to amplifier.
Shorting Plug	Use phono plug with 600 ohms across center pin and shell.	Shorts amplifier input to eliminate noise pickup.
Power Supply Bleeder Resistor (10 ohms at 1W)	Commercial Grade	Discharges power supply filter capacitors prior to disassembly or resistance measurements.
Output Load Resistor ($8\Omega \pm 0.5\%$, 250W)	Commercial Grade	Provides 8-ohm load for amplifier output termination.
Output Load Resistor ($4\Omega \pm 0.5\%$, 250W)	Commercial Grade	Provides 4-ohm load for amplifier output termination.
Output Load Capacitor (0.5 mfd)	Mylar	Provides capacitive load for instability checks.
AC Power Control Box	Optional Item. Fabricate in accordance with Figure 1.	Monitors and controls primary power for amplifier.
Amplifier Output Load Box	Optional Item. Fabricate in accordance with Figure 2.	Provides various amplifier loads and can monitor shorted output.

Table 1. Test Equipment Required for Servicing

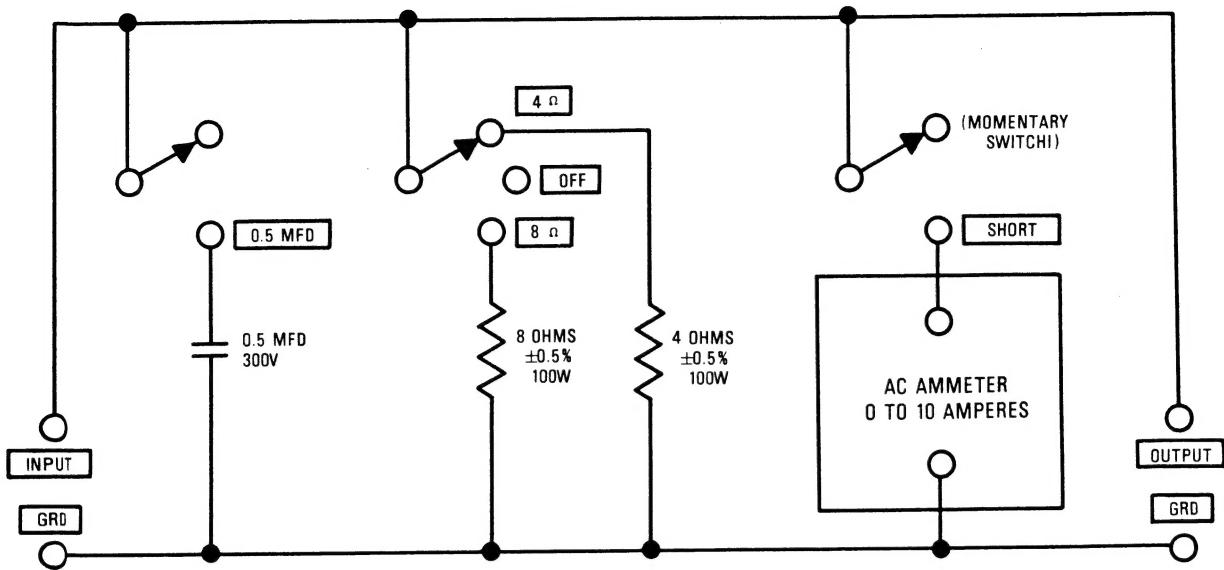


Figure 2. Amplifier Output Load Box Simplified Schematic

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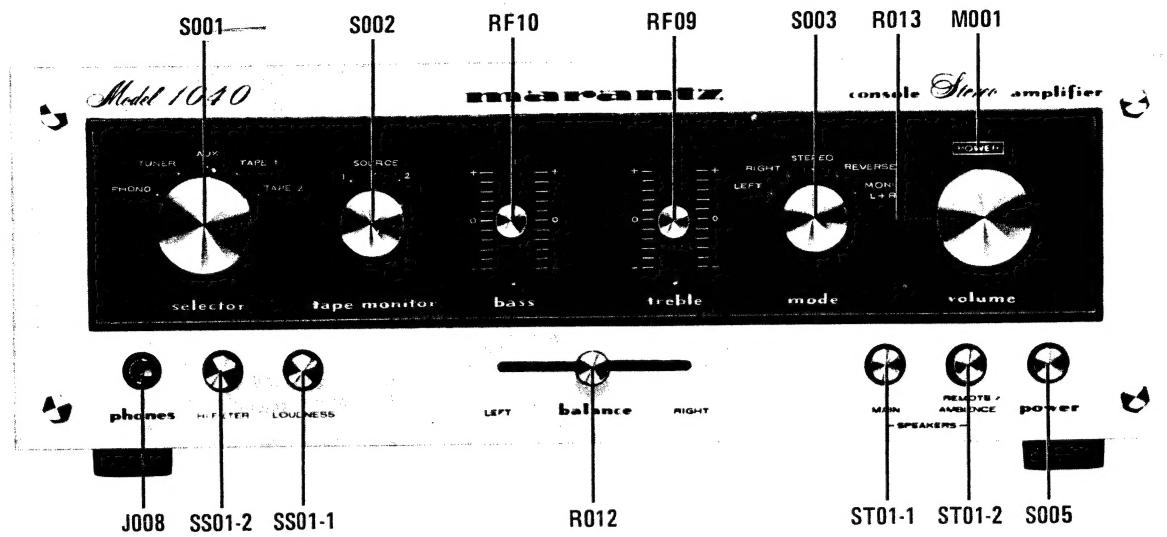


Figure 3. Front Panel Adjustments and Component Locations

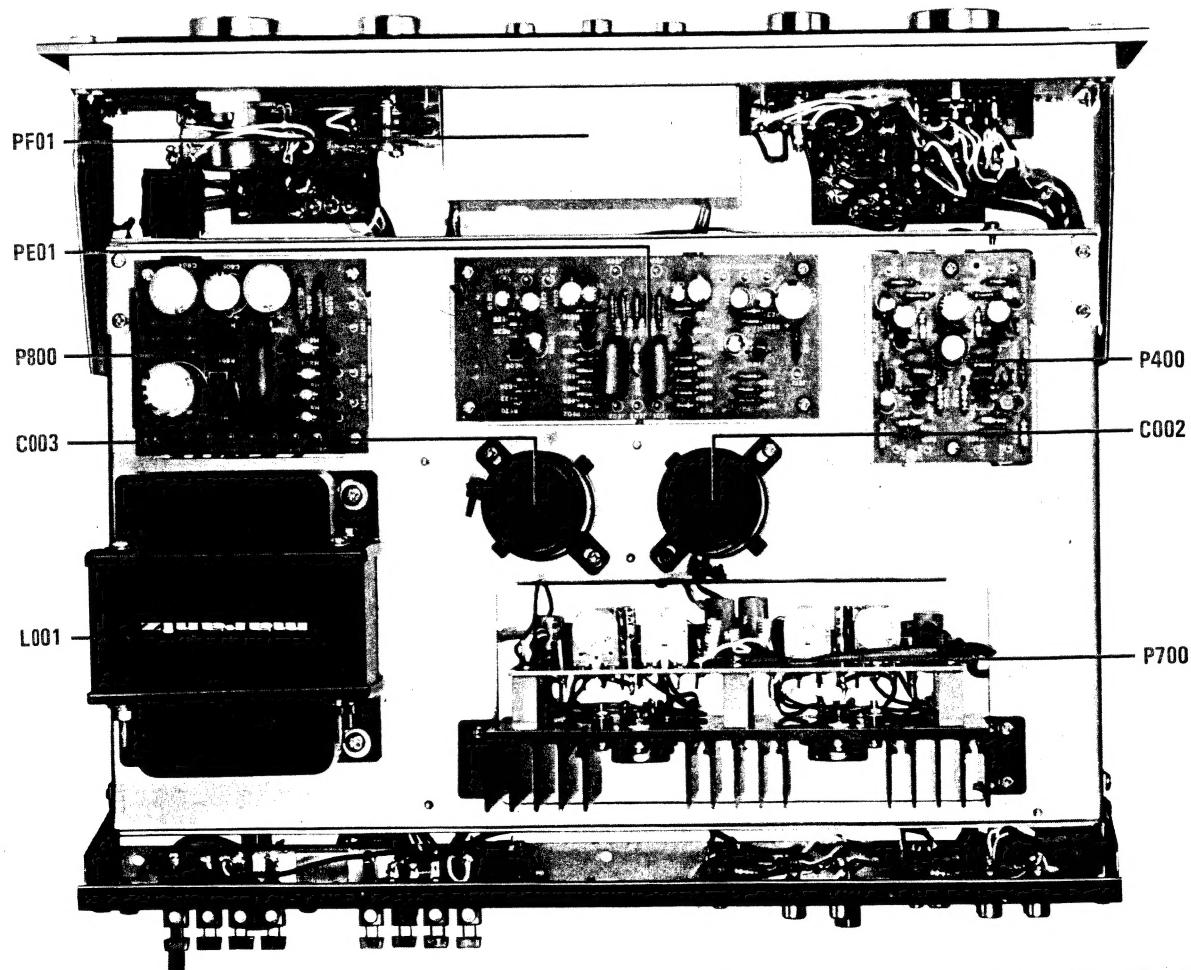


Figure 4. Main Chassis Component Locations (Top View)

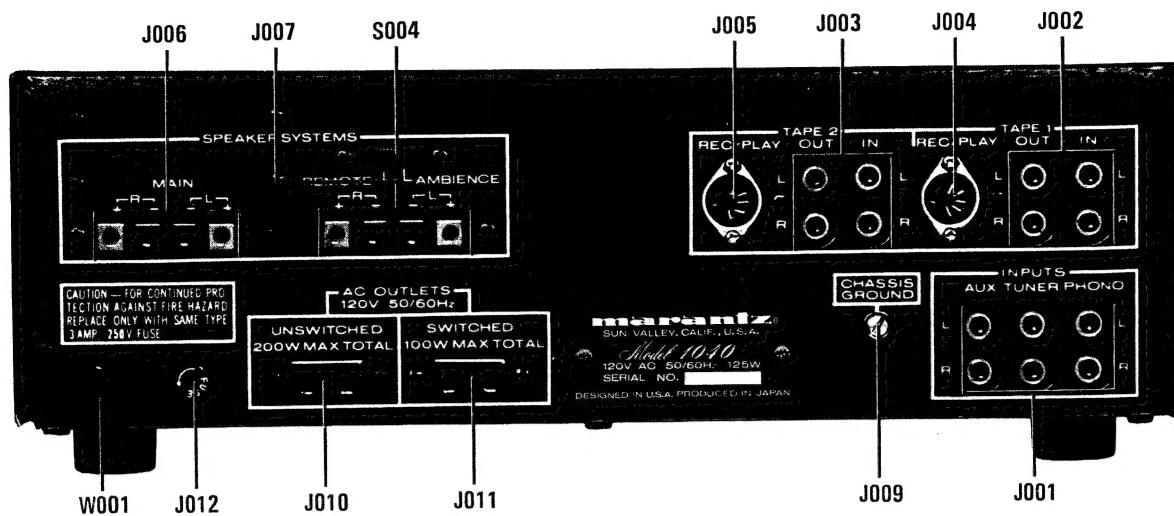


Figure 5. Rear Panel Adjustment and Component Locations

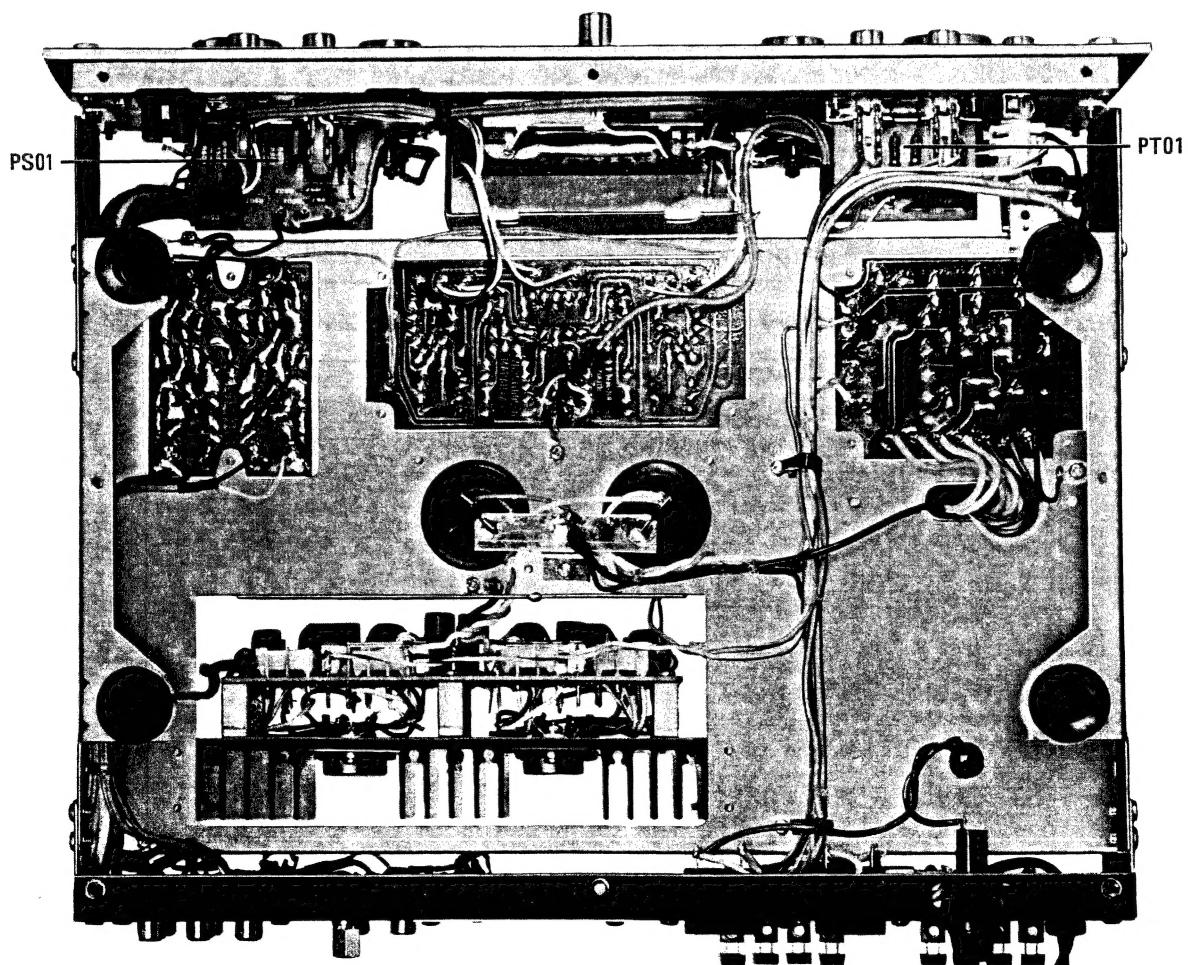


Figure 6. Main Chassis Component Locations (Bottom View)

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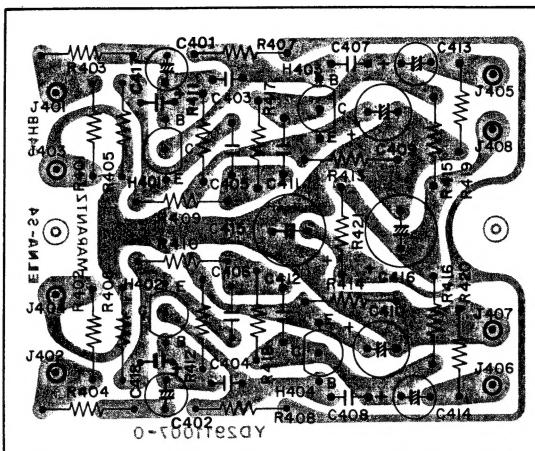


Figure 7. Phono Amplifier Assembly P400 Component Locations

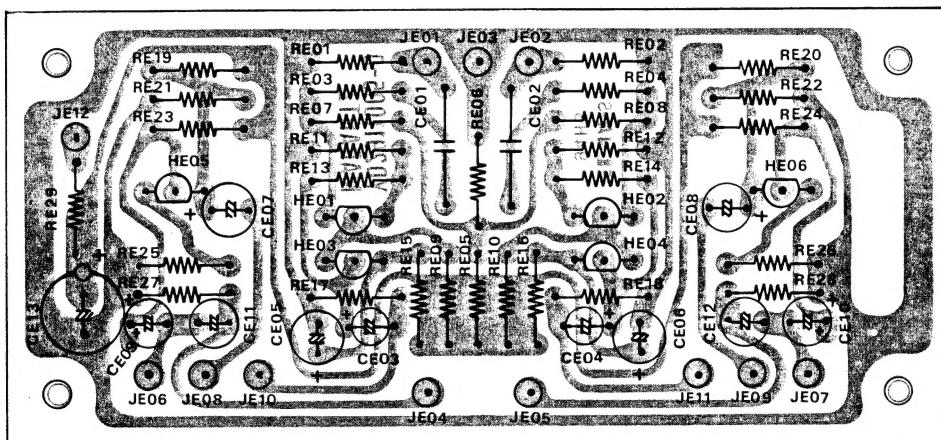


Figure 8. Tone Amplifier Assembly PE01 Component Locations

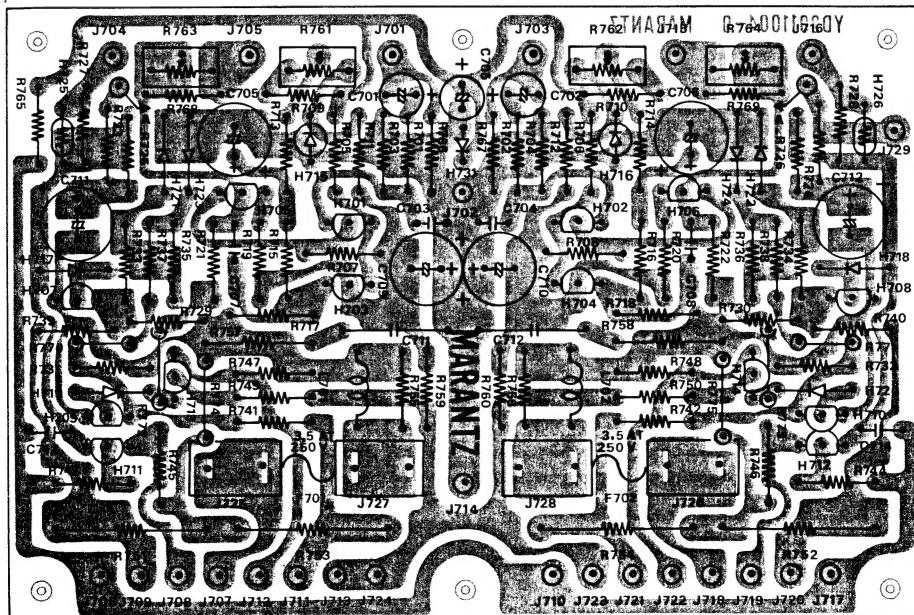


Figure 9. Main Amplifier Assembly P700 Component Locations

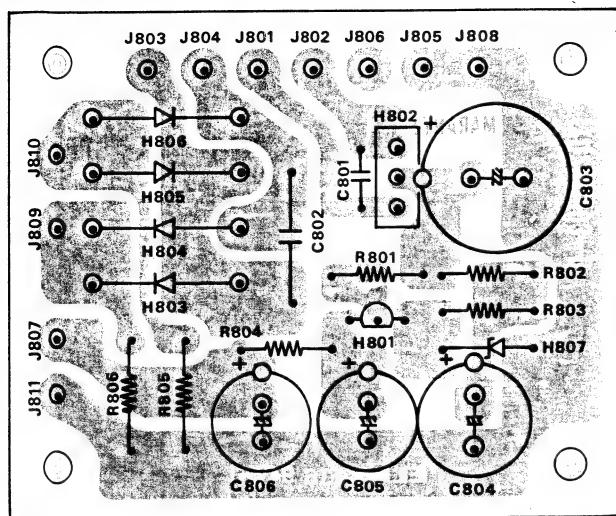


Figure 10. Power Supply Assembly P800 Component Locations

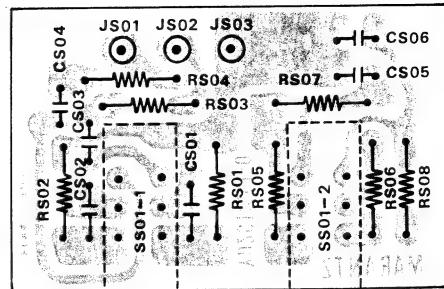


Figure 11. Loudness and Hi Filter Switch Assembly PS01 Component Locations

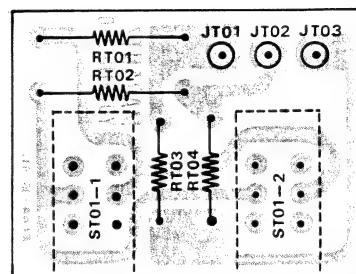


Figure 12. Speaker Switch Assembly PT01 Component Locations

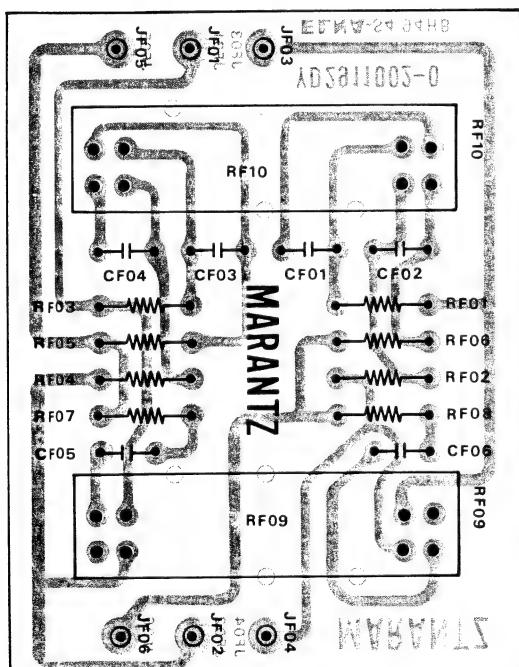


Figure 13. Tone Control Assembly PF01 Component Locations

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NOTE

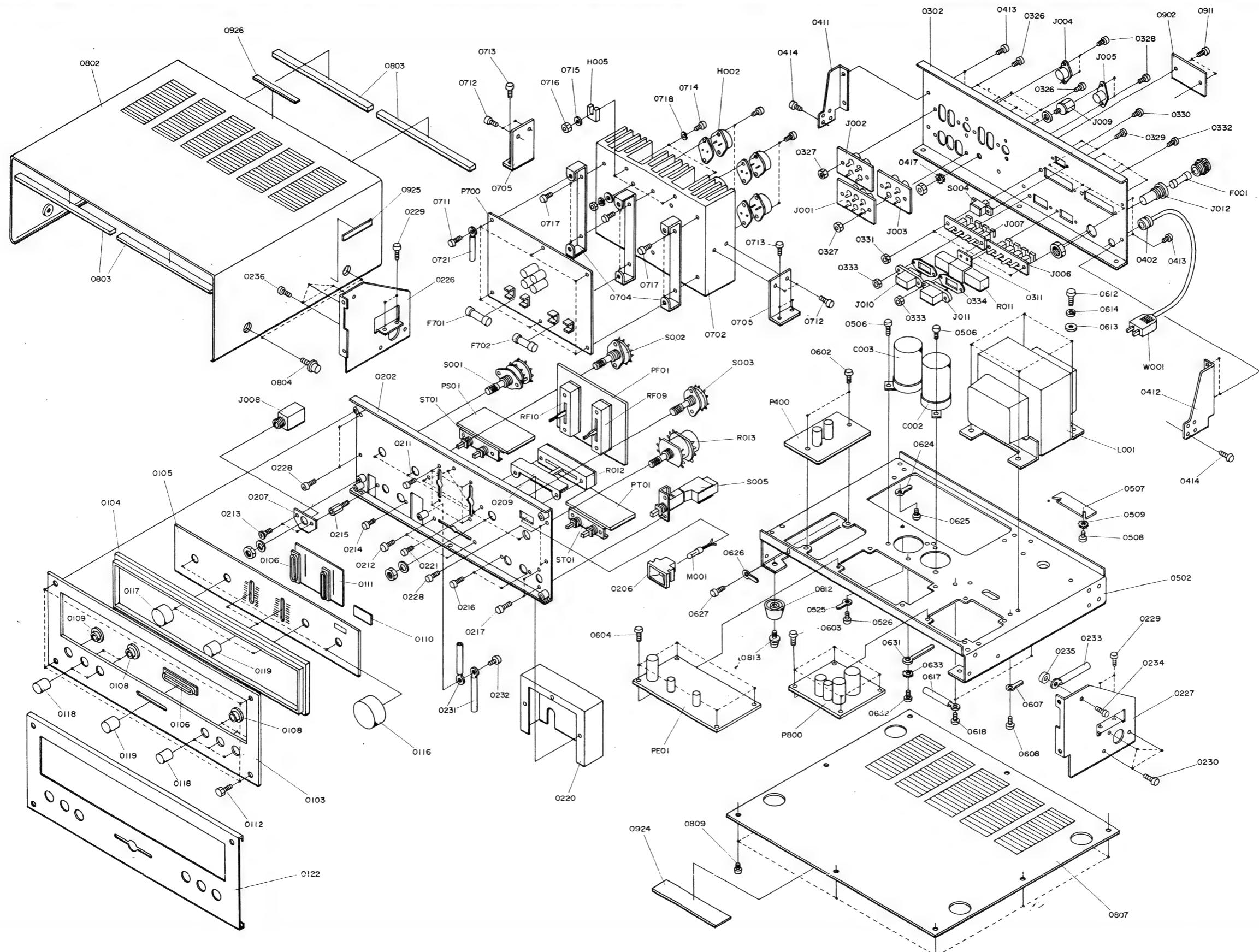
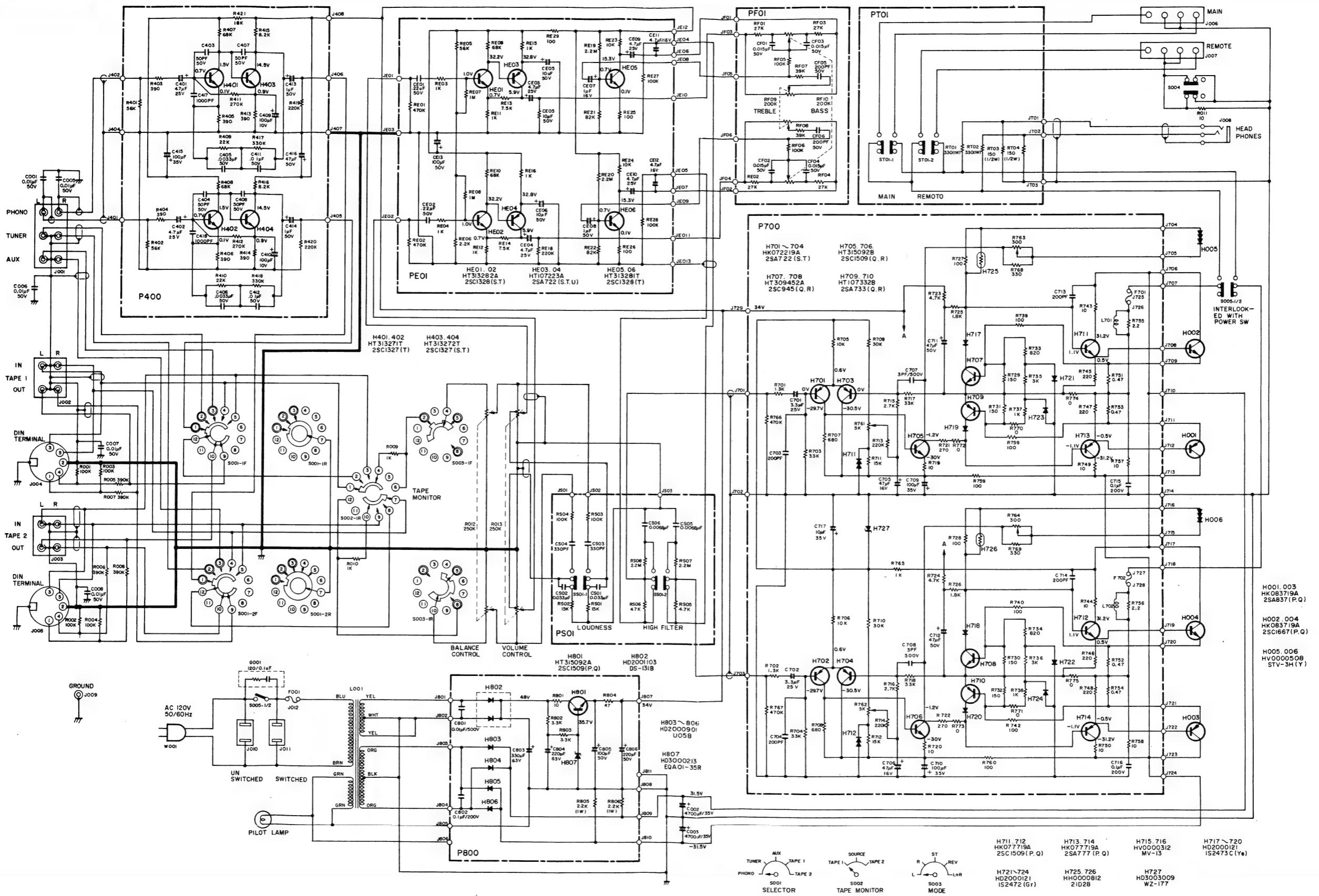


Figure 14. Exploded Mechanical Diagram



9. PARTS LIST

REF. DESIG.	PART NO.	DESCRIPTION	REF. DESIG.	PART NO.	DESCRIPTION
A 0103 0104 0105 0106 0107 0108 0109 0110 0111 0122	291106340 291106301 291240101 291106302 285025901 285425901 288625901 273125901 291205303 292630301 291105301	Front Panel Assembly Escutcheon Frame Escutcheon Bush x 2 Bush Bush x 5 Bush Cover Mask Cover	H404 J401 J402 J403 J404 J405 J406 J407 J408 0626	HT313272A YP1000113 YP1000113 YP1000113 YP1000113 YP1000113 YP1000113 YP1000113 YP1000113 62030039W	Transistor, 2SC 1327 (S.T) Plug Plug Plug Plug Plug Plug Plug Plug Lug
P400	YD2911007 ZZ2911007	PHONO AMP. CIRCUIT BOARD-P400 P.W. Board, Phono Amp. (Print Only) P.W. Board Assembly	PE01	YD2911005 ZZ2911005	TONE AMP. CIRCUIT BOARD-PE01 P.W. Board, Tone Amp. (Print Only) P.W. Board Assembly
R401 R402 R403 R404 R405 R406 R407 R408 R409 R410	RT0556314 RT0556314 RT0539114 RT0539114 RT0539114 RT0539114 RN0568314 RN0568314 RT0522314 RT0522314	P400—RESISTORS All resistors are ±5% and 1/4W. 56KΩ 56KΩ 390Ω 390Ω 390Ω 390Ω 68KΩ 68KΩ 22KΩ 22KΩ	RE01 RE02 RE03 RE04 RE05 RE06 RE07 RE08 RE09 RE10	RT0547414 RT0547414 RT0510214 RT0510214 RT0556314 RT0522214 RN0510514 RN0510514 RT0568314 RT0568314	PE01—RESISTORS All resistors are ±5%, and 1/4W. 470KΩ 470KΩ 1KΩ 1KΩ 56KΩ 2.2KΩ 1MΩ 1MΩ 68KΩ 68KΩ
R411 R412 R413 R414 R415 R416 R417 R418 R419 R420	RN0527414 RN0527414 RT0539114 RT0539114 RT0582214 RT0582214 RN0533414 RN0533414 RT0522414 RT0522414	270KΩ 270KΩ 390Ω 390Ω 8.2KΩ 8.2KΩ 330KΩ 330KΩ 220KΩ 220KΩ	RE11 RE12 RE13 RE14 RE15 RE16 RE17 RE18 RE19 RE20	RT0510214 RT0510214 RT0575214 RT0575214 RT0510214 RT0510214 RT0522414 RT0522414 RT0522514 RT0522514	1KΩ 1KΩ 7.5KΩ 7.5KΩ 1KΩ 1KΩ 220KΩ 220KΩ 2.2MΩ 2.2MΩ
R421	RT0518314	18KΩ	RE21 RE22 RE23 RE24 RE25 RE26 RE27 RE28 RE29	RT0568314 RT0568314 RT0510314 RT0510314 RT0510114 RT0510114 RT0510414 RT0510414 RT0510114	68KΩ 68KΩ 10KΩ 10KΩ 100Ω 100Ω 100KΩ 100KΩ 100Ω
C401 C402 C403 C404 C405 C406 C407 C408 C409 C410	EE4750251 EE4750251 DD1650001 DD1650001 DF1633205 DF1633205 DD1650001 DD1650001 EA1070109 EA1070109	P400—CAPACITORS Electroly, 4.7μF ±20%, 25V Electroly, 4.7μF ±20%, 25V Ceramic, 50PF ±10%, 50V Ceramic, 50PF ±10%, 50V Film, 0.0033μF ±10%, 50V Film, 0.0033μF ±10%, 50V Ceramic, 50PF ±10%, 50V Ceramic, 50PF ±10%, 50V Electroly, 100μF +100%,-10%,10V Electroly, 100μF +100%,-10%,10V	CE01 CE02 CE03 CE04 CE05 CE06 CE07 CE08 CE09 CE10	DF1722405 DF1722405 EE4750251 EE4750251 EA1060509 EA1060509 EE1050501 EE1050501 EE4750251 EE4750251	PE01—CAPACITORS Film, 0.22μF ±20%, 50V Film, 0.22μF ±20%, 50V Electroly, 4.7μF ±20%, 25V Electroly, 4.7μF ±20%, 25V Electroly, 10μF +100%,-20%, 50V Electroly, 10μF +100%,-20%, 50V Electroly, 1μF ±20% 50V Electroly, 1μF ±20%, 50V Electroly, 4.7μF ±20%, 25V Electroly, 4.7μF ±20%, 25V
C411 C412 C413 C414 C415 C416 C417 C418	DF1610305 DF1610305 EE1050501 EE1050501 EA1070359 EA4760509 DK1610201 DK1610201	Film, 0.01μF ±10%, 50V Film, 0.01μF ±10%, 50V Electroly, 1μF ±20%, 50V Electroly, 1μF ±20%, 50V Electroly, 100μF +100%,-10%,35V Electroly, 47μF +100%,-10%,50V Ceramic, 1000PF Ceramic, 1000PF	CE11 CE12 CE13	EQ4750161 EQ4750161 EA1070509	Electroly, 4.7μF ±30%, 16V Electroly, 4.7μF ±30%, 16V Electroly, 100μF +50%,-20%, 50V
H401 H402 H403	HT313271T HT313271T HT313272A	P400—MISCELLANEOUS Transistor, 2SC1327(T) Transistor, 2SC1327(T) Transistor, 2SC1327(S.T)			

REF. DESIG.	PART NO.	DESCRIPTION	REF. DESIG.	PART NO.	DESCRIPTION
HE01	HT313282A	PE01-MISCELLANEOUS	R734	RT0582114	820KΩ
HE02	HT313282A	Transistor, 2SC1328 (S.T)	R735	RT0530214	1.3KΩ
HE03	HT107223A	Transistor, 2SC1328 (S.T)	R736	RT0530214	1.3KΩ
HE04	HT107223A	Transistor, 2SA722 (S.T.U)	R737	RT0510214	1KΩ
HE05	HT313281T	Transistor, 2SC1328 (T)	R738	RT0510214	1KΩ
HE06	HT313281T	Transistor, 2SC1328 (T)	R739	GF0510114	100Ω
JE01	YP1000113	Plug	R740	GF0510114	100Ω
JE02	YP1000113	Plug	R741	GF0510114	100Ω
JE03	YP1000113	Plug	R742	GF0510114	100Ω
JE04	YP1000113	Plug	R743	GF0510014	10Ω
JE05	YP1000113	Plug	R744	GF0510014	10Ω
JE06	YP1000113	Plug	R745	GF0522114	220Ω
JE07	YP1000113	Plug	R746	GF0522114	220Ω
JE08	YP1000113	Plug	R747	GF0522114	220Ω
JE09	YP1000113	Plug	R748	GF0522114	220Ω
JE10	YP1000113	Plug	R749	GF0510014	10Ω
JE11	YP1000113	Plug	R750	GF0510014	10Ω
JE12	YP1000113	Plug	R751	GW1047202	0.47Ω ±10%, 2W
0711	51100306A	B.H.M. Screw x 6 B3 x 6	R752	GW1047202	0.47Ω ±10%, 2W
P700	YD2911004 ZZ2911004	MAIN AMP. CIRCUIT BOARD-P700 P.W. Board, Main Amp. (Print Only) P.W. Board Assembly	R753	GW1047202	0.47Ω ±10%, 2W
		RESISTORS All resistors are ±5% and 1/4W, unless otherwise indicated.	R754	GW1047202	0.47Ω ±10%, 2W
R701	RT0513214	1.3KΩ	R755	RC1002212	2.2Ω ±10%, 1/4W
R702	RT0513214	1.3KΩ	R756	RC1002212	2.2Ω ±10%, 1/4W
R703	RT0533314	33KΩ	R757	BT0510002	10Ω ±5%, 2W
R704	RT0533314	33KΩ	R758	GT0510002	10Ω ±5%, 2W
R705	RT0510314	10KΩ	R759	GF0510114	100Ω
R706	RT0510314	10KΩ	R760	GF0510114	100Ω
R707	RT0568114	680Ω	R761	RA0502017	Trimming, 5KΩ ±20%
R708	RT0568114	680Ω	R762	RA0502017	Trimming, 5KΩ ±20%
R709	RT0530314	30KΩ	R763	RA0301002	Trimming, 300Ω ±20%
R710	RT0530314	30KΩ	R764	RA0301002	Trimming, 300Ω ±20%
R711	RT0515314	15KΩ	R765	GF0510214	1KΩ
R712	RT0515314	15KΩ	R766	RT0547414	470KΩ
R713	RT0522414	220KΩ	R767	RT0547414	470KΩ
R714	RT0522414	220KΩ	R768	RT0533114	330Ω
R715	RT0527214	2.7KΩ	R769	RT0533114	330Ω
R716	RT0527214	2.7KΩ	R770	RC0000012	0Ω
R717	RT0533314	33KΩ	R771	RC0000012	0Ω
R718	RT0533314	33KΩ	R772	RC0000012	0Ω
R719	RT0510014	10Ω	R773	RC0000012	0Ω
R720	RT0510014	10Ω	R774	RC0000012	0Ω
R721	RT0527114	270Ω	R775	RC0000012	0Ω
R722	RT0527114	270Ω	C701	EE3350251	P700—CAPACITORS, COILS & FUSES
R723	GF0547214	4.7KΩ	C702	EE3350251	Electroly, 3.3μF, 25V
R724	GF0547214	4.7KΩ	C703	DD1620101	Electroly, 3.3μF, 25V
R725	GF0518214	1.8KΩ	C704	DD1620101	Ceramic, 200PF ±10%
R726	GF0518214	1.8KΩ	C705	EE4760161	Ceramic, 200PF ±10%
R727	RT0510114	100Ω	C706	EE4760161	Electroly, 47μF, 16V
R728	RT0510114	100Ω	C707	DD1003050	Electroly, 47μF, 16V
R729	GF0515114	150Ω	C708	DD1003050	Ceramic, 3PF, 500V
R730	GF0515114	150Ω	C709	EA1070359	Ceramic, 3PF, 500V
R731	GF0515114	150Ω	C710	EA1070359	Electroly, 100μF, 35V
R732	GF0515114	150Ω	C711	EA4760509	Electroly, 100μF, 35V
R733	RT0582114	820KΩ	C712	EA4760509	Ceramic, 0.1μF, 200V
			C713	DD1620101	Ceramic, 0.1μF, 200V
			C714	DD1620101	Ceramic, 0.1μF, 200V
			C715	DF1710452	Ceramic, 0.1μF, 200V
			C716	DF1710452	Ceramic, 0.1μF, 200V
			C717	EA1060359	Electroly, 10μF, 35V
			L701	LC2272001	Coil, 2.7μH

REF. DESIG.	PART NO.	DESCRIPTION	REF. DESIG.	PART NO.	DESCRIPTION	REF. DESIG.	PART NO.	DESCRIPTION	REF. DESIG.	PART NO.	DESCRIPTION
L702	LC2272001	Coil, 2.7μH	P800	YD2911003 ZZ2911003	POWER SUPPLY CIRCUIT BOARD—P800 P.W. Board, Power Supply (Print Only) P.W. Board Assembly	RS01	RT0515314	P.W. Board Assembly	RF09	RS0204001	Variable, 200KΩ
F701	FS1035001	Fuse, 3.5A, 250V(UL)	R801	GF0510014	P800—RESISTORS	RS02	RT0515314	PS01—RESISTORS	RF10	RS0204001	Variable, 200KΩ
F702	FS1035001	Fuse, 3.5A, 250V(UL)	R802	GF0533214	10Ω ±5%, 1/2W	RS03	RT0510414	All resistors are ±5% and 1/2W.	CF01	DF1615305	PF01—CAPACITORS & PLUGS
H701	HT107221S	P700—SEMICONDUCTORS	R803	GF0533214	3.3KΩ ±5%, 1/2W	RS04	RT0510414	15KΩ	CF02	DF1615305	Film Cap., 0.015μF ±10%, 50V
H702	HT107221S	Transistor, 2SA722 (S.T.)	R804	GF0547014	3.3KΩ ±5%, 1/2W	RS05	RT0547214	15KΩ	CF03	DF1615305	Film Cap., 0.015μF ±10%, 50V
H703	HT107221S	Transistor, 2SA722 (S.T.)	R805	GJ0522201	47Ω ±5%, 1/2W	RS06	RT0547214	100KΩ	CF04	DF1615305	Film, 0.015μF ±10%, 50V
H704	HT107221S	Transistor, 2SA722 (S.T.)	R806	GJ0522201	2.2KΩ ±5%, 1W	RS07	RT0522514	100KΩ	CF05	DD1620101	Ceramic Cap., 200PF ±10%, 50V
H705	HT315092B	Transistor, 2SC1509 (Q.R)	C801	DK1810351	2.2KΩ ±5%, 1W	RS08	RT0522514	2.2MΩ	CF06	DD1620101	Ceramic Cap., 200PF ±10%, 50V
H706	HT315092B	Transistor, 2SC1509 (Q.R)	C802	DF1710452	P800—CAPACITORS	CS01	DF1633305	PS01—CAPACITORS	JF01	YP1000113	Plug
H707	HT309452A	Transistor, 2SC945 (Q.R)	C803	EA3370631	Ceramic, 0.01μF +100%,-0%,500V	CS02	DF1633305	Film, 0.033μF ±10%	JF02	YP1000113	Plug
H708	HT309452A	Transistor, 2SC945 (Q.R)	C804	EA2270631	Film, 0.1μF, 200V	CS03	DK1633101	Film, 0.033μF ±10%	JF03	YP1000113	Plug
H709	HT107332B	Transistor, 2SA733 (Q.R)	C805	EA1070509	Electroly, 330μF, 63V	CS04	DK1633101	Ceramic, 330PF ±10%	JF04	YP1000113	Plug
H710	HT107332B	Transistor, 2SA733 (Q.R)	C806	EA2270509	Electroly, 220μF, 63V	CS05	DF1668205	Ceramic, 330PF ±10%	JF05	YP1000113	Plug
H711	HT315091P	Transistor, 2SC1509 (P.Q)	H801	HT315092A	Electroly, 100μF, 50V	CS06	DF1668205	Film, 0.0068μF ±10%	JF06	YP1000113	Plug
H712	HT315091P	Transistor, 2SC1509 (P.Q)	H802	HD2001103	Electroly, 220μF, 50V	SS01	SP0202012	PS01—MISCELLANEOUS	S001	SR0405006	GENERAL MISCELLANEOUS
H713	HT107771P	Transistor, 2SA777 (P.Q)	H803	HD2000901	P800—SEMICONDUCTORS	SS02	SP0203004	Shadow Switch	S002	SR0203004	Potary Switch, Selector
H714	HT107771P	Transistor, 2SA777 (P.Q)	H804	HD2000901	Transistor, 2SC1509 (P.Q)	SS09	RT0510214	Rotary Switch, Tape Monitor	R009	RT0510214	Resistor, 1KΩ ±5%, 1/2W
H715	HV0000312	Varistor, MV-13	H805	HD2000901	Diode, DS-131B	R010	RT0510214	Resistor, 1KΩ ±5%, 1/2W	R010	RT0510214	Resistor, 1KΩ ±5%, 1/2W
H716	HV0000312	Varistor, MV-13	H806	HD2000901	Diode, U05B	S003	SR0205008	Rotary Switch, Mode	R013	RM0254028	Variable Resist., 250KΩ (B), Volume
H717	HD2000121	Diode, 1S2473C (Ye)	H807	HD3000213	Diode, U05B	JS01	YP1000113	Plug	0231	138200503	Clamper x 2
H718	HD2000121	Diode, 1S2473C (Ye)	J801	YP1000113	P800—MISCELLANEOUS	JS02	YP1000113	Plug	0233	138200503	Clamper
H719	HD2000121	Diode, 1S2473C (Ye)	J811	YP1000113	Plug	JS03	YP1000113	Plug	M001	IN1008030	Lamp
H720	HD2000121	Diode, 1S2473C (Ye)	0607	62030039W	PT01—MISCELLANEOUS	PT01	YD2911006 ZZ2911006	SPEAKER SWITCH BOARD—PT01	W001	YC0240010	AC Cord, For U.S.A.
H721	HD2000221	Diode, 1S2472 (Gr.)	0202	291216050	P800—MISCELLANEOUS	PT01	SP0202013	P.W. Board, Speaker Switch (Print Only)	F001	FS1030006	Fuse, 250V, 3A (UL), For U.S.A.
H722	HD2000221	Diode, 1S2472 (Gr.)	0206	291225901	Bracket K	RT01	GJ0533101	P.W. Board Assembly	0302	291116001	Bracket, For U.S.A.
H723	HD2000221	Diode, 1S2472 (Gr.)	0209	291210903	Bush	RT02	GJ0533101	Resistor, 330Ω ±5%, 1W	0311	291100501	Clamper
H724	HD2000221	Diode, 1S2472 (Gr.)	J801	YP1000113	Shield	RT03	GF0515112	Resistor, 330Ω ±5%, 1W	0323	51100306S	B.H.M. Screw x 4, For U.S.A. B 3x6
H725	HH0000812	Thermistor, 21D28	J811	YP1000113	B.H.M. Screw x 4 B 2.6 x 5	RT04	GF0515112	Resistor, 150Ω ±5%, 1/2W	0324	51100303A	Hexagon Nut x 4, For U.S.A.
H726	HH0000812	Thermistor, 21D28	0607	62030039W	F.H.M. Screw x 2 F 3 x 4	ST01	SP0202013	Resistor, 150Ω ±5%, 1/2W	0326	51100308S	B.H.M. Screw x 6 B 3 x 8
H727	HD3003009	Diode WZ-177	0211	51102605A	B.H.M. Screw x 2 B 3 x 6	RT01	GJ0533101	Shadow Switch, Main-Remoto	0327	51100303A	Hexagon Nut x 6
J701	YP1000114	Plug	0212	51100305A	B.H.M. Screw x 2	RT02	GJ0533101	Plugs	0328	51570306B	P.H. Tapt Screw x 4 P 3 x 6 ST
J724	YJ0800021	Socket	0213	51040304A	F.H.M. Screw x 2	RT03	GF0515112	Plugs	0329	51100306S	B.H.M. Screw x 2 B 3 x 6
J725	YJ0800021	Plug	0214	51100305A	B.H.M. Screw B 3 x 5	RT04	GF0515112	Plugs	0330	51100308S	B.H.M. Screw x 4 B 3 x 8
J728	YP1000114	Plug	0215	291210102	Support	JT01	YP1000113	PT01—MISCELLANEOUS	0331	53110303A	Hexagon Nut x 2
J729	YP1000114	Plug	0216	51100306A	B.H.M. Screw x 2 B 3 x 6	JT02	YP1000113	Shadow Switch, Main-Remoto	0332	51100308S	B.H.M. Screw x 4 B 3 x 8
H001	HT108371P	GENERAL MISCELLANEOUS	0217	51100306A	B.H.M. Screw x 2 B 3 x 6	JT03	YP1000113	Plugs	0333	53110303A	Hexagon, Nut x 4
H002	HT316671P	Transistor, 2SA837 P:Q	0220	291210904	Support	RT01	GJ0533101	GENERAL MISCELLANEOUS	0334	289611801	Spacer x 2
H003	HT108371P	Transistor, 2SC1667 P:Q	0221	51100306A	B.H.M. Screw x 3 B 3 x 6	RT02	GJ0533101	Pushswitch, Power	0402	145525903	Bush, AC Cord, For U.S.A.
H004	HT316671P	Transistor, 2SA837 P:Q	0226	282816013	Bracket	RT03	GF0515112	Printed Comp., 120Ω+0.1μF1,	0411	282816003	Bracket
H005	HV0000508	Varistor, STV-3H (Y)	0227	282816014	Bracket	RT04	GF0515112	For U.S.A.	0412	282816004	Bracket
H006	HV0000508	Varistor, STV-3H (Y)	0228	51100306A	B.H.M. Screw B 3 x 6	R012	SP0301003 BF1040002	Variable Resist. 250KΩ, Balance	0413	51100306S	B.H.M. Screw x 4 B 3 x 6
0702	291126701	Heat-Sink	0232	51100306A	B.H.M. Screw B 3 x 6	PF01	YD2911002 ZZ2911002	TONE CONTROL CIRCUIT BOARD—PF01	0417	54050400R	T.L. Washer OR
0704	286716001	Bracket x3	0234	51100306A	B.H.M. Screw B 3 x 6	RT01	RT0510414	P.W. Board, Tone Control (Print Only)	S004	SS0202038	Slide Switch, Ambience
0705	291116004	Bracket x2	0235	53110303A	Hexagon Nut	RT02	RT0510414	P.W. Board Assembly	R001	RT0510414	Resistor, 100KΩ ±5%, 1/2W
0712	51380306P	P.H.Tap Screw x 4 P 3 x 6 T	J008	YJ0100065	Jack, Headphone	RT03	RT0510414	Resistor, 100KΩ ±5%, 1/2W	R002	RT0510414	Resistor, 100KΩ ±5%, 1/2W
0714	51440314A	B.H.M. Screw S x 2 B 3 x 14	0207	291212001	Insulator	RT04	RT0510414	Resistor, 100KΩ ±5%, 1/2W	R003	RT0510414	Resistor, 100KΩ ±5%, 1/2W
0715	54020301A	Flat Washer P x 2	0208	YJ0100065	Jack, Headphone	RT05	RT0539414	Resistor, 390KΩ ±5%, 1/2W	R004	RT0539414	Resistor, 390KΩ ±5%, 1/2W
0716	53110303A	Hexagon Nut x 2	0209	291212001	Insulator	RT06	RT0510414	Resistor, 390KΩ ±5%, 1/2W	R005	RT0539414	Resistor, 390KΩ ±5%, 1/2W
0717	51380306P	P.H. Tap Screw x 6 P 3 x 6 T	0210	YJ0100065	Jack, Headphone	RT07	RT0527314	Resistor, 390KΩ ±5%, 1/2W	R006	RT0539414	Resistor, 390KΩ ±5%, 1/2W
0525	62030039W	Lug	0211	291212001	Insulator	RT08	RT0527314				

REF. DESIG.	PART NO.	DESCRIPTION
J006	YT0304006	Terminal, Speaker
J007	YT0304006	Terminal, Speaker
J009	YT0101003	Terminal, Ground
J010	YJ0400048	Socket, AC Outlet
J011	YJ0400048	Socket, AC Outlet
J012	YJ0800012	Socket, Fuse Holder, For U.S.A.
C006	DK1710301	Ceramic Cap., 0.01μF, 50V
C007	DK1710301	Ceramic Cap., 0.01μF, 50V
0624	62030039W	Lug
C001	DK1710301	Ceramic Cap., 0.01μF, 50V
C005	DK1710301	Ceramic Cap., 0.01μF, 50V
C008	DK1710301	Ceramic Cap., 0.01μF, 50V
0617	138200503	Clamper x 2
L001	TS1850209	Power Transf., For U.S.A.
C002	EC4780352	Electroly Cap., 4700μF, 35V
C003	EC4780352	Electroly Cap., 4700μF, 35V
0229	51570306B	P. H. Tapt Screw x 4 P 3 x 6 ST
0230	51100305A	B. H. M. Screw x 6 B 3 x 5
0414	51100306A	B. H. M. Screw x 8 B 3 x 6
0502	291110501	Chassis
0506	51570306B	P. H. Tapt Screw x 4 P 3 x 6 ST
0507	291116005	Bracket
0508	51570306B	P. H. Tapt Screw P 3 x 6 ST
0509	54050300R	T. L. Washer OR
0526	51570306B	P. H. Tapt Screw P 3 x 6 ST
0602	51570306B	P. H. Tapt Screw x 2 P 3 x 6 ST
0603	51570306B	P. H. Tapt Screw x 3 P 3 x 6 ST
0604	51570306B	P. H. Tapt Screw x 4 P 3 x 6 ST
0612	51570408B	P. H. Tapt Screw x 4 P 4 x 8 ST
0613	54020401A	Flat Washer P x 4
0614	54040402N	Spring Washer x 4
0618	51570306B	P. H. Tapt Screw x 2 P 3 x 6 ST
0625	51570306B	P. H. Tapt Screw P 3 x 6 ST
0629	51570306B	P. H. Tapt Screw P 3 x 6 ST
0631	121000501	Clamper
0632	51570306B	P. H. Tapt Screw P 3 x 6 ST
0633	54050300R	T. L. Washer OR
0713	51570306B	P. H. Tapt Screw x 4 P 3 x 6 ST
0812	275905701	Leg x 4
0813	51490410S	B. H. M. Screw F S x 4 B 4 x 10 F/S
0931	288686101	Label, Marantz
0112	52017039J	Bolt x 4
0116	282815401	Knob, Selector/Balance x 2
0117	282815402	Knob, Mode/Tape Mon. x 2
0118	281815401	Knob, Hi Filter/Loudness/Main/Remote/Power x 5
0119	285015401	Knob, Balance/Bass/Treble x 3
0802	282825701	Lid, Top
0803	257711807	Spacer x 4
0804	51480406S	B. H. M. Screw B 4 x 6 F
0807	282825702	Lid, Bottom
0809	51100406S	B. H. M. Screw F x 8 B 4 x 6 F
0902	291126501	Indicator, For U.S.A.
0911	51100305S	B. H. M. Screw x 2 B 3 x 5
0914	951091102	Label, UL Factor Code, For U.S.A.
0915	951120101	Label, UL, For U.S.A.
0924	257886101	Label, Caution to prevent
0925	257886102	Label, Do not remove cover.
0926	257886103	Label, See marking on button.

REF. DESIG.	PART NO.	DESCRIPTION
1002	291185101	Instructions, Set, For U.S.A.
1011	291185601	Schematic Diagram, For U.S.A.
1020	281885104	Instructions, Packing
1021	282885108	Instructions, Accessories
1022	288585107	Instructions, Cabinet Mounting
1026	257785401	Guarantee Card
1027	257785102	Instructions
1028	257781301	Envelope, For U.S.A.
1102	291180101	Packing Case, Inner
1103	291180111	Packing Case, Outer
1108	289180301	Partitioner x 2
1112	901383033	Polyethylen Bag, Set
1114	901302501	Polyethylen Bag, Printed Matter
1117	102980401	Sleeve, AC Cord
1119	273182101	Silicagel x 2
1122	952281501	Serial No Card x 4, For U.S.A.

10. TECHNICAL SPECIFICATIONS

Gain – Phono (low level)	75 dB
Phono to recording output	37 dB
High level	38 dB
Input Impedance – Low level input	Phono 47 Kohms
– High level input	50 Kohms
Input Sensitivity – Phono (Low)	2.1 mV
Frequency Response	±2 dB, 20 Hz to 20 kHz at rated power output
Intermodulation Distortion	Less than 0.3% at rated power output from 20 Hz to 20 kHz with both channels driven (S.M.P.T.E.)
Damping Factor	Greater than 20 into 8 ohms load
Total Noise – From magnetic phono input	Less than 2.5µV equivalent input at rated to power amp output output into 8 ohms
Volume Tracking	Within 3 dB
Rated Power Output (Continuous average per channel, all channels driven.)	
Power Output	20 Watts 4 ohms
	20 Watts 8 ohms
	15 Watts 16 ohms
Power Band	20Hz to 20kHz
THD	0.3%

GENERAL

Power Requirements 120 Volts ~ 50/60Hz)

(This unit can be converted by a qualified technician to operate on 110/220/240 ~ 50/60Hz)
Power Consumption – at rated power output, both channels operating 125 Watts
idle power (volume control at zero) 20 Watts

Dimensions — Panel Width 14-1/8 inches

Dimensions – Panel width	11-1/2 inches
– Panel Height	4-3/4 inches
– Depth	11 inches
Weight – Unit alone	16.4 lbs
– Packed for shipment	23.2 lbs

SERVICE INFORMATION FOR EUROPEAN MODEL

The information contained here in includes the rear panel and main chassis component locations, schematic diagram, parts list and voltage conversion.

For the circuit description, alignment method and repairing hints, refer to the original service manual.

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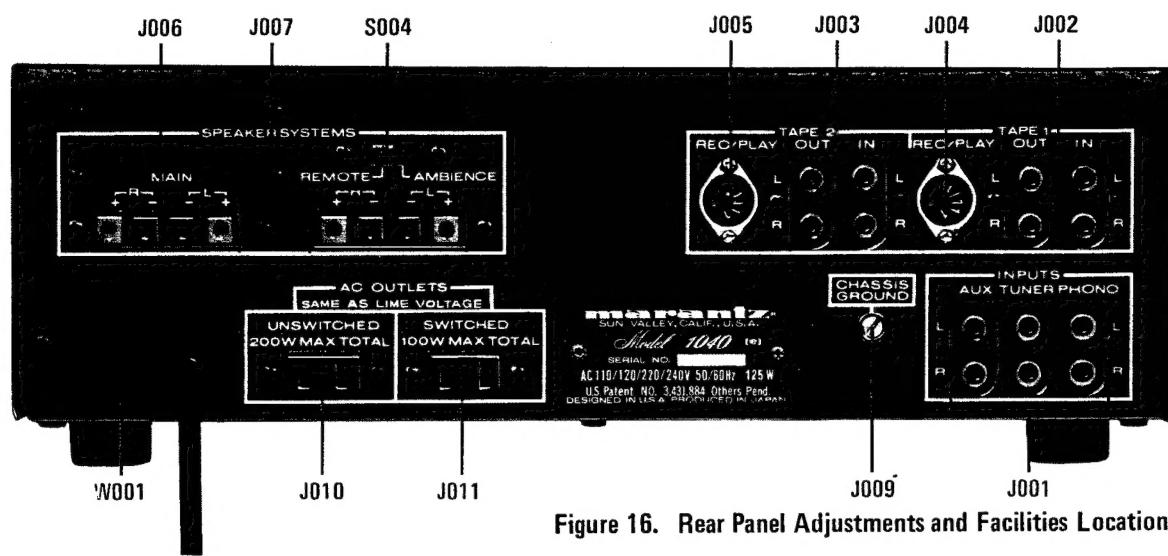


Figure 16. Rear Panel Adjustments and Facilities Locations

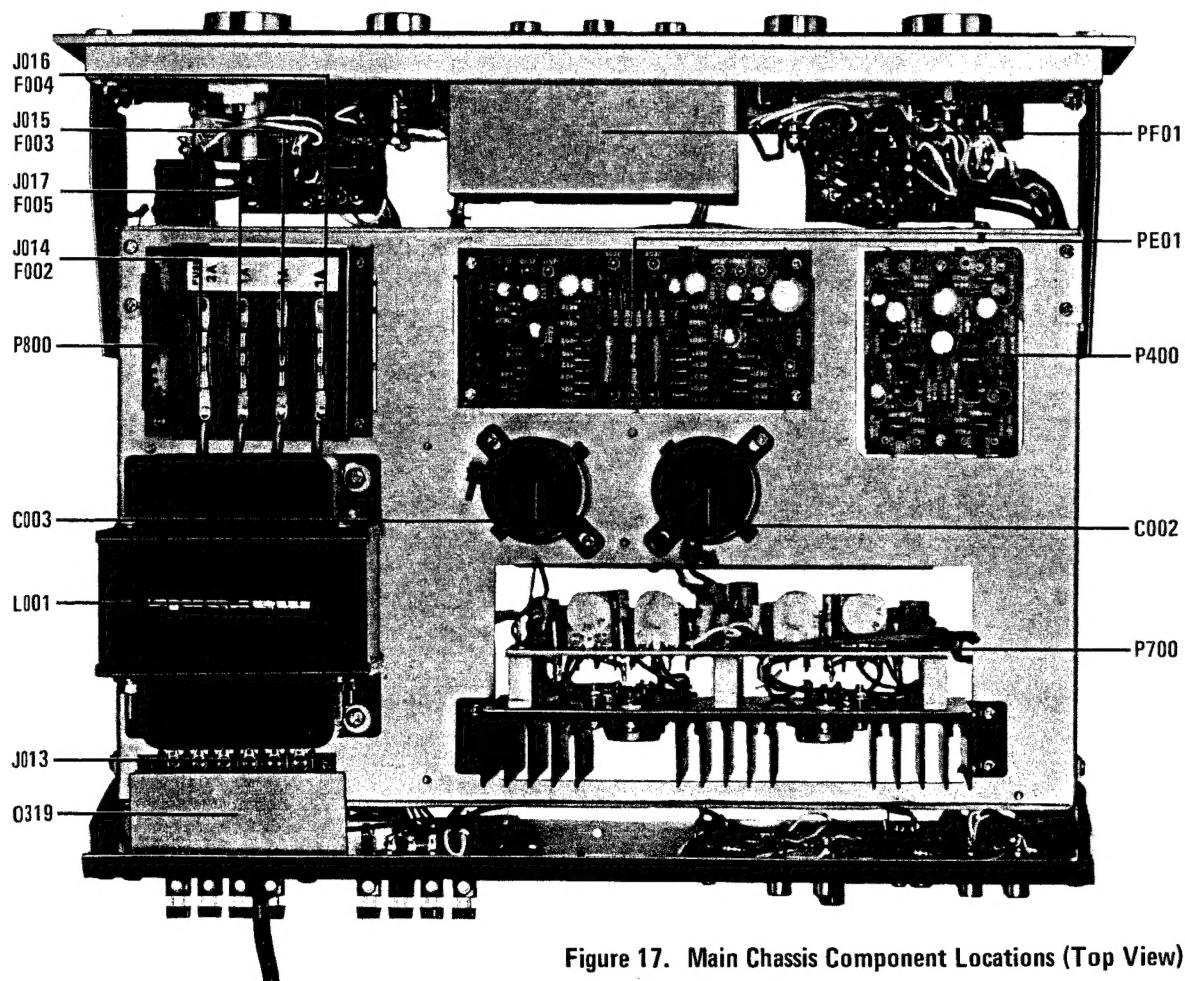
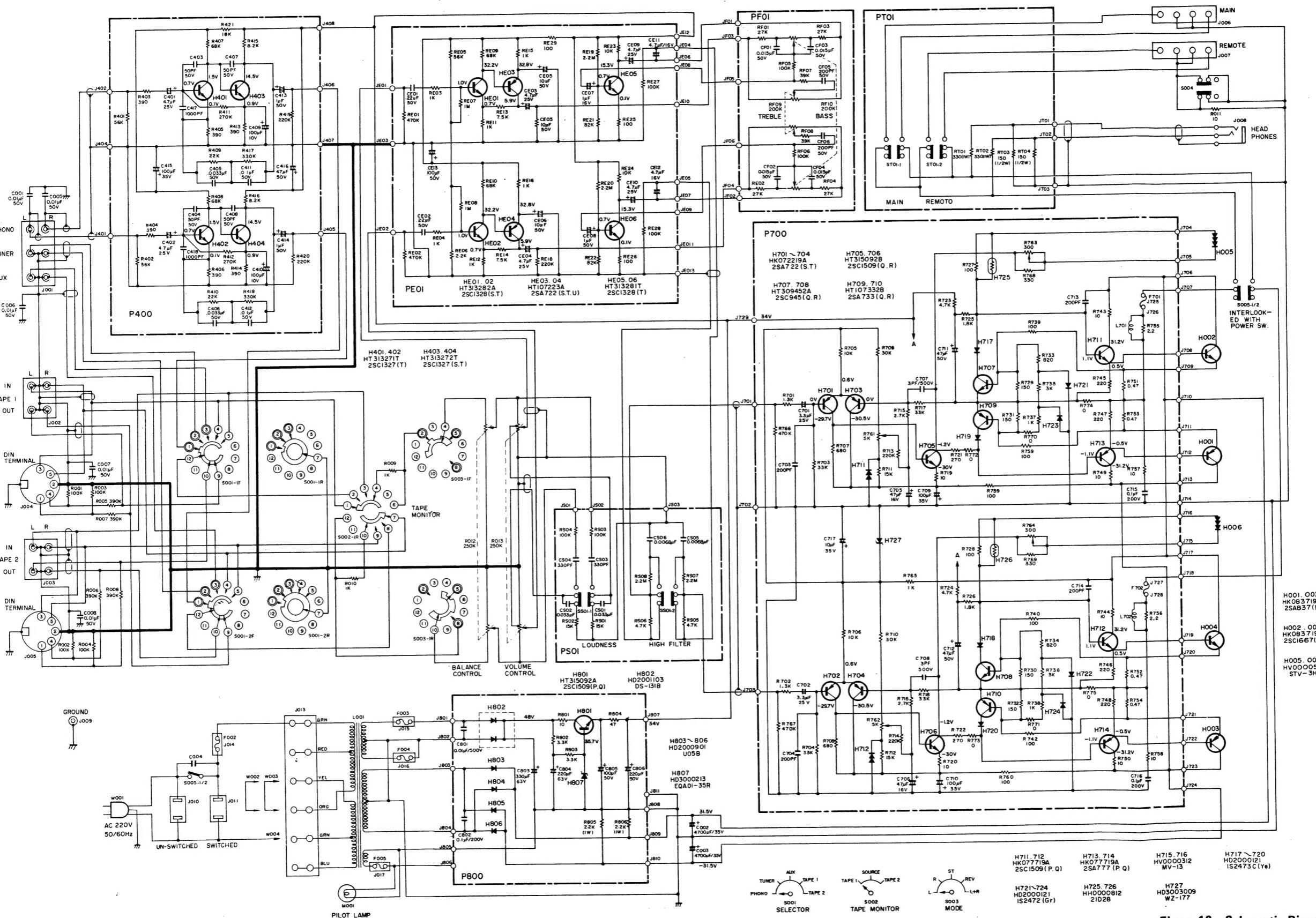


Figure 17. Main Chassis Component Locations (Top View)



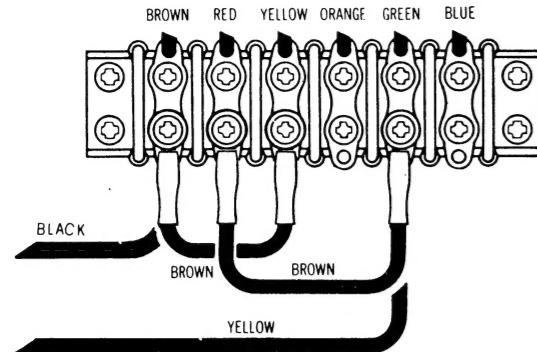
VOLTAGE CONVERSION

This model is equipped with a universal power transformer to permit operation at 110, 120, 220 and 240 V AC 50 to 60 Hz.

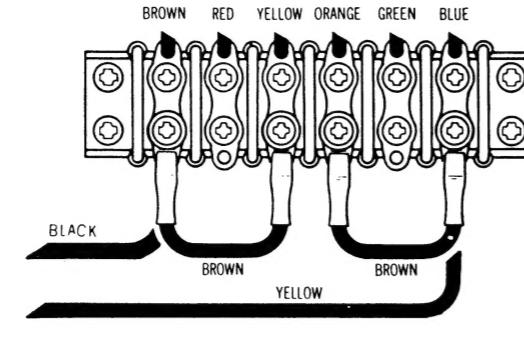
To convert the unit to the required voltage perform the following steps:

- (1) Remove the lid (top).
- (2) Change the jumper wires as illustrated below for the required AC voltage.

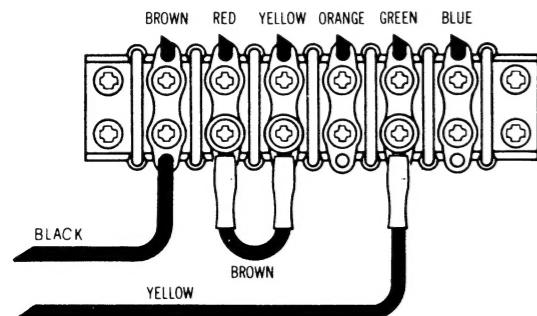
CAUTION: DISCONNECT POWER SUPPLY CORD FROM AC OUTLET BEFORE CONVERTING VOLTAGE.



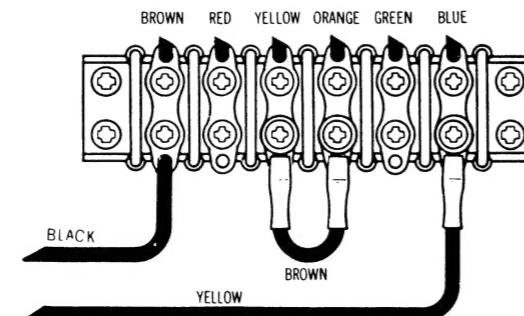
For 110V Operation



For 120V Operation



For 220V Operation



For 240V Operation

Figure 19. Voltage Conversion Chart

PARTS LIST

REF. DESIG.	PART NO.	DESCRIPTION
W001	YC0190003	AC Cord
0304	291116003	Bracket
0318	51100306S	B.H.M. Screw x 2 B 3 x 6
0321	51100306S	B.H.M. Screw x 2 B 3 x 6
0403	282125901	Bush, AC Cord
0404	53110303A	Hexagon Nut x 2
0405	54050300R	T.L. Washer OR x 2
0406	51060316A	B.H.M. Screw x 2 B 3 x 16
0407	55060305S	T.R. Rivet x 2
0408	284906702	Cap
J013	YL0106004	Terminal
W002	YB0007001	Connective Cord
W003	YB0007001	Connective Cord
W004	YB0027001	Connective Cord
0316	281816006	Bracket
0317	51100312A	B.H.M. Screw x 4 B 3 x 12
0319	282126902	Protector
0320	288912005	Insulator
0322	285412001	Insulator
J014	YJ0800009	Socket, Fuse Holder
J015	YJ0800009	Socket, Fuse Holder
J016	YJ0800009	Socket, Fuse Holder
J017	YJ0800009	Socket, Fuse Holder
0516	282816012	Bracket
0517	51100306A	B.H.M. Screw x 4 B 3 x 6
0518	53110303A	Heragon Nut x 4
0930	291126510	Indicator, Ampere Label
1001	TS1850210	Power Transf.
F002	FS1020005	Fuse, 250V, 2A
F003	FS1010007	Fuse, 250V, 1A
F004	FS1010007	Fuse, 250V, 1A
0904	291126503	Indicator
1004	291185121	Instructions, Set
1012	291185602	Schematic Diagram
1024	281881301	Envelope
1118	956000004	Hang Tag, Voltage Indicator
1124	952301511	Serial NO. Card x 4

* To be used in the European Model Only.